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Introduction

As educators and parents it is imperative to teach each student to understand how to use, to manipulate, to compare, to compute numbers easily and fluently, and to develop an understanding of number patterns, number relationships, and number functions. Much of the technology that is being used today and will be used in the future requires students to have a strong foundation of mathematics, to have the knowledge and expertise of knowing how and when to apply those skills in new situations, and to solve problems that require more than one- or two-step solutions.

Maths outcomes

The activity pages in *Problem-Solving Maths Journals* provide the students with opportunities to practice and review important maths skills. Through the use of this book, the student will be able to do the following:

- broaden their understanding of number sense.
- add and subtract numbers to the billions.
- multiply numbers with factors containing two or more digits.
- divide numbers with remainders.
- add, subtract, multiply, divide, compare like fractions, unlike fractions, mixed fractions and improper fractions.
- work with decimals, money and percentages.
- solve maths problems requiring two or more steps.
- develop an understanding of probability.
- work with statistics, geometry, time and measurement.

How to use this book

This book can be used in a wide variety of ways to best meet the needs of each student.

- Select pages to help improve specific skills for each individual student. For example, one student might need help with a maths skill or concept, such as time, money or fractions.
- For whole-class instruction, complete a page each day as part of the morning routine or as a warm-up for that day's maths lesson.
- Selected pages can be placed at an activity centre, used for classwork, sent home for homework or to review/preview new concepts and skills.

At the bottom of each activity page, there is a section

for students to use. Students can create and solve their own maths problem and then explain their solution. This section is optional and can be used as an extension. The teacher can place these student-created problems into new worksheets or a problem-solving book.

Developing a maths vocabulary

It is important that each student develop a comprehensive maths vocabulary using terms that are unique to maths and are used or read about on a regular basis. For example, the student might read a newspaper article about a player's batting average going up or down, or the student might listen to a radio report on the rise and fall of the stock market. To be able to effectively judge and evaluate the information for accuracy and relevance, the student needs to independently compare the information to the facts, have an understanding of the reasonableness of a conclusion or fact, and know how that same data can be manipulated to paint a rosier or gloomier picture.

This book provides a 'Maths vocabulary' (pages 168–178). Each page of the maths dictionary contains a maths-related vocabulary term, its definition, and provides a space for the student to write or draw an example problem. Each vocabulary word is ordered in the same sequence that the word is used in the maths journal pages.

To use the maths dictionary, photocopy one set of words for each student. Provide each student with a small blank journal. When a new word is used in a word problem, have students cut out the appropriate word card, write and/or draw an example problem, and glue the page in the maths journal. By having the student write or draw an example problem, the student is able to show their understanding of the word, concept, or skill. As more words are added to the dictionary, the student is building a great reference tool that can be used at home, in the classroom or in future maths classes.



Name: _____

Date: _____

Warm up

Write the unit of time each event lasts – seconds, minutes or hours.

A. a birthday party _____

B. a blink of an eye _____

C. eating a sandwich _____

D. a sneeze _____

E. roasting a chicken _____

Word problem

F. Read each clue. If the answer is 'yes' make an 'O' in the box. If the answer is 'no' make an 'X' in the box. (Note: The houses are in order from shortest to longest building time.)

- Ivan's house didn't take the most nor the least amount of time to build.
- Fay is allergic to wood so she would never use it to build a house.
- Gary likes to use wood in every house he makes.
- Helen likes how long brick houses last.

Who built each home?

sand: _____ blocks: _____ bricks: _____ tree: _____

	Fay	Gary	Helen	Ivan
wood blocks				
sand castle				
tree house				
bricks				

Create your own maths problem and explain your solution.

Maths problem:

Explanation/Solution:

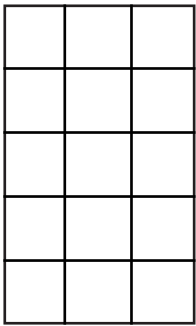
Answers: A. hours B. seconds C. minutes D. seconds E. hours F. sand = Fay, blocks = Gary, bricks = Helen, tree = Ivan

Name: _____

Date: _____

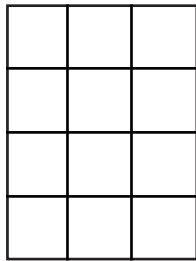
Warm up

Find the perimeter for each shape.



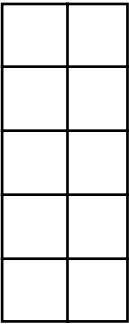
A.

_____ units



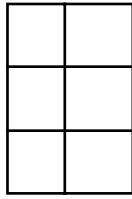
B.

_____ units



C.

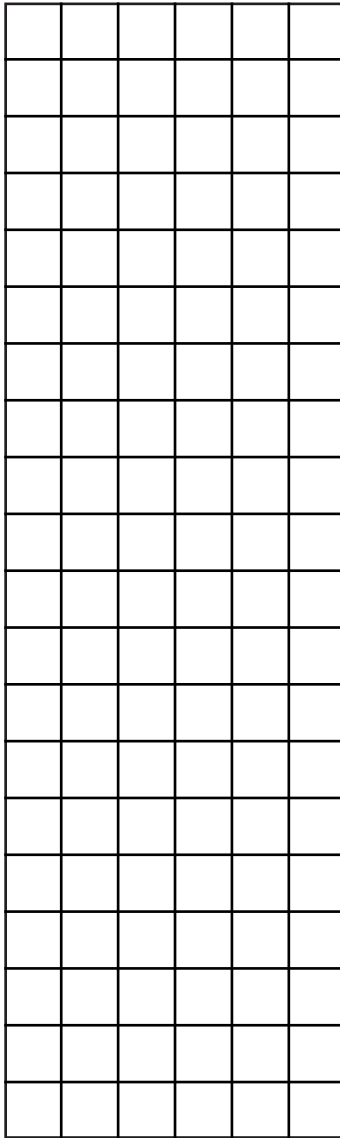
_____ units



D.

_____ units

Word problem



E. Draw a square with a perimeter of 20 units.

F. Draw a rectangle with a perimeter of 20 units.

Create your own maths problem and explain your solution.

Maths problem:

Explanation/Solution: _____

Answers: A. 16 units B. 14 units C. 14 units D. 10 units E. Each side of the square will be 5 units. F. Answers will vary: 1 unit by 20 units or 2 units by 10 units or 4 units by 5 units.

Warm up

Name: _____

Date: _____

3

Count the money. Write the amount using a dollar sign and decimal point.

A.



B.



C.



D.



E.



Word problem

F. Using the fewest number of coins, identify which coins each customer used to pay for one of the dog services.

1. Mrs Brown had Fifi checked for fleas. _____
2. Mr Green had Bruno groomed. _____
3. Mrs White had Fido take a bath. _____
4. Mr Black had Dudley play fetch. _____
5. Mrs Grey had Buster taken for a walk. _____

Doggy Business

Daily walking	\$0.35
Grooming	\$0.65
Bathing	\$1.95
Play fetch	\$0.80
Flea check	\$0.20

Create your own maths problem and explain your solution.

Maths problem:

Explanation/Solution: _____

Answers: A. \$0.60 B. \$0.50 C. \$1.50 D. \$0.60 E. \$9.00 F1. $1 \times 20c$ F2. $1 \times 50c, 1 \times 10c, 1 \times 5c$ F3. $1 \times \$1, 1 \times 50c, 2 \times 20c, 1 \times 5c$
F4. $1 \times 50c, 1 \times 20c, 1 \times 10c$ F5. $1 \times 20c, 1 \times 10c, 1 \times 5c$

Warm up

Name: _____

Date: _____



Write the number.

A. number of 20 c
in \$1.00

B. number 50 c
in \$1.00

C. number of 10 c
in \$1.00

D. number of 5 c
in \$1.00

E. number of dollars
in \$1.00

Word problem

F. Which is worth more: 77 10 cent coins or 47 20 cent coins?

Create your own maths problem and explain your solution.

Maths problem:

Explanation/Solution:

Answers: A. 5 B. 2 C. 10 D. 20 E. 1 F. 47 20 c are worth more. $77 \times 10 \text{ c} = \7.70 , $47 \times 20 \text{ c} = \9.40